Haier

FILE No.HMRSM-002-06

Service Manual

Pharmaceutical Refrigerator

HYC-260•HYC-360

Haier Medical & Laboratory Products Co., Ltd.

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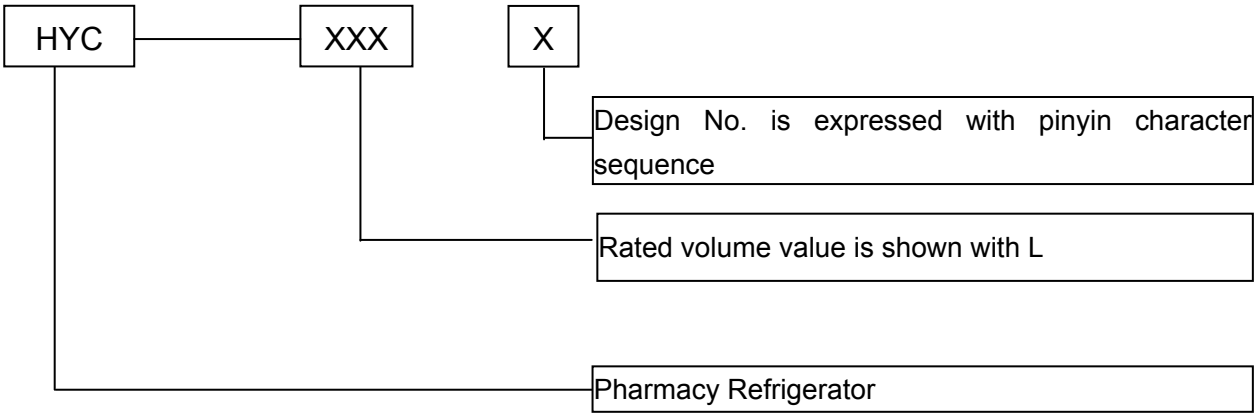
【Designation】

Regulations for type naming:



Note: rated volume can be the gross volume or effective volume; the manufacturer can decide it by him according to the actual situation. The effective volume value must be marked on the nameplate whether effective volume or gross volume is marked in the product name.

Examples:

HYC-360 means that the Pharmaceutical storage refrigerator with the temperature at horizontal and rated effective volume 360L.

【Product appearance】

Structure diagram

Note: The product color and appearance shall be based on goods in kind.

【Main Functions and Features of the Product】

a. Pharmaceutical refrigerator, in which the temperature inside the refrigerator is controlled between 2-8℃;

b. Microcomputer control, in which the temperature inside the refrigerator is displayed digitally;

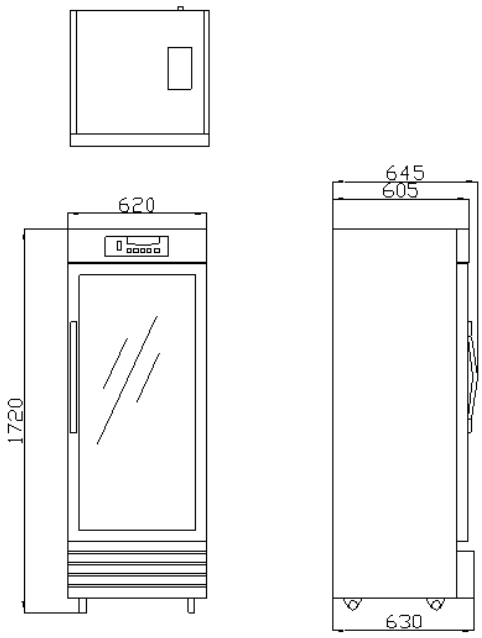
c. Automatic defrosting;

d. Audible and visual over-temperature alarm, open alarm and sensor fault alarm can be sent;

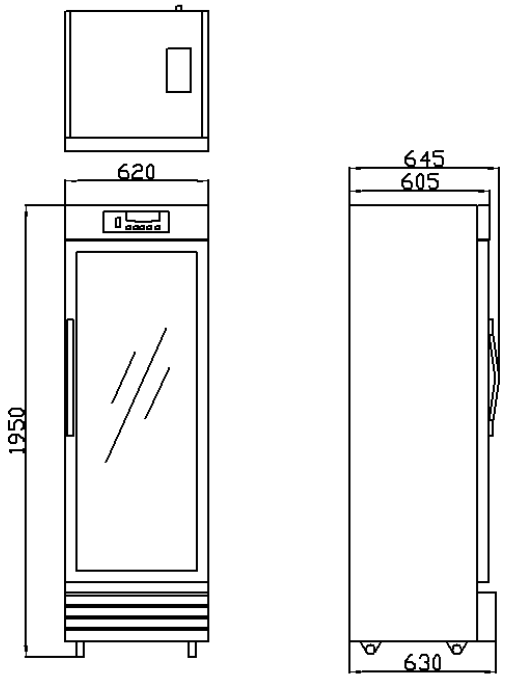
e. Air cooling system which operates reliably;

【Dimensions】

HYC-260



HYC-360



【product nameplate】

HYC-260

Haier Pharmaceutical Refrigerator			
Model	HYC-260	Power Input	340W
Rate Voltage	220 V/50 Hz	Energy consumption	3.3kW·h/24h
Rate current	2.6A	Climate Class	N
Power of the Lamp	15W	Effective Volume	260L
Refrigerant	R134a 300g	Weight	88 kg
Protection Class	I		
Foaming Cabinet	CP/IP	Number	Manufacture Date and No. in the Barcode
CE Haier Medical and Laboratory Products Co., Ltd			

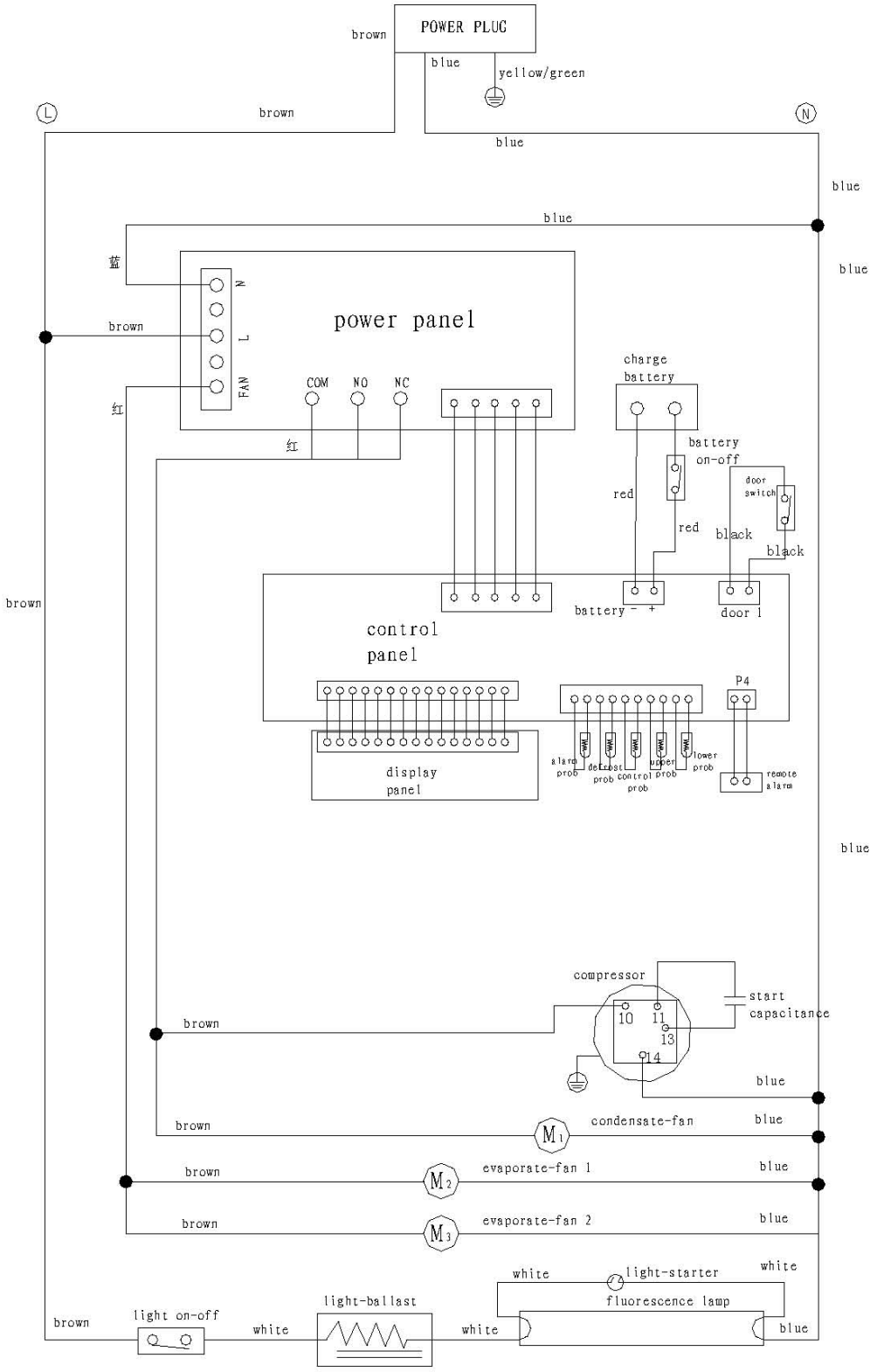
HYC-360

Haier Pharmaceutical Refrigerator			
Model	HYC-360	Power input	430 W
Voltage/Frequency	220 V / 50 Hz	Power consumption	3.6 kW • h/24h
Rated current	3.5A	Climate type	N
Power of the Lamp	15W	Effective volume	360 L
Refrigerant	R134a 350g	Weight	99kg
Anti-shock Safety Classification	I	Number	Manufacture Date and No. in the Barcode
Foaming Cabinet	CP/IP	Haier Industrail Park.Economic Technology Department Zone.Qingdao.266510.P.R.China.	
CE Haier Medical and Laboratory Products Co., Ltd			

【Technical Parameters】

Model	HYC-260	HYC-360
Climate type	N	N
Electric shock resistance type	I	I
Effective volume (L)	260	360
Rated voltage (V)	220V/50Hz	220V/50Hz
Fan power (W)	3	3.6
Total input power (W)	84	84
Power consumption (KW.h/24h)	0.57	0.57
Refrigerant	R134A 300g	R600a 350g
Refrigerating mode	Forced air cooling circulation	Forced air cooling circulation
Outline dimensions (width × depth × height) (mm)	500×490×640	500×490×640
Package dimensions (width × depth × height) (mm)	522×622×690	522×622×690
Door	Non-transparent foaming door	Transparent glass door
Net weight (kg)	38	38
Evaporator	Composite plate type	Composite plate type
Condenser	Wire and tube type	Wire and tube type
Compressor	NS24LAEG	HVY57AA

【Circuit Diagram】



【Compressor Parameters (under Standard Conditions) 】

Product model	HYC-260	HYC-360
Compressor model	Danfoss NL7.3MF	Danfoss NL10MF
Rated frequency (Hz)	50	50
Refrigerating capacity (W)	480	687
Running current (A)	1.82	2.5
Input power (W)	274	397
Cooling mode	Air cooling	Air cooling
Rated voltage (V)	220~240	220~240
Voltage range (v)	187~254	187~264
Oil loading (ML)	320	320

【Fan Parameters (under Standard Conditions) 】

1. Induced draught fan:

Fan model:	FD-YJF617B-525 (induced draught fan)		
Starting voltage (V):	≤132V（AC）	Current (A):	0.25±15%
Rotate speed (rpm):	≥2100	Blade material:	White ABS engineering plastic
Wiring description:	The plastic wiring terminal employs Molex four-circuit connector 5557-04R and the model of internal wiring insert block is 5556T.		

2. Condensate fan:

Fan model:	M4Q045-BD01-01		
Rated voltage (V):	230V	Current (A):	0.19
Rotate speed (rpm):	1300	Power (W):	29
Operating temperature (℃):	-30……+40	Weight (kg):	0.9

【Transportation and Installation】

Installation

1. Remove packing materials and packing strings.

   Remove transport package materials and packing strings. Install a rear panel support and open the refrigerator door for ventilation. If the external face plate is dirty, clean it with weak detergent and wash with water.

2. Prepare a temperature sensor monitoring bottle

   Prior to the use of the refrigerator, check that whether the temperature sensor monitoring bottle behind the drawer (or shelf) is filled with solution up to the scale mark of 200; if there is no solution or the solution is not added up to the scale mark of 200, refill the monitoring bottle (including an upper monitoring bottle and an lower monitoring bottle) with 10% glycerinum (or other solution such as glycol) as per the following steps:

   (1) Take down the upper and bottom shelves and sensor fixing plate of the monitoring bottle.

   (2) Remove the sensor from the monitoring bottle.

   (3) Screw off two bolts for taking out the bottle.

   (4) Pour 10% glycerinum (or other solution such as glycol) into the monitoring bottle up to the scale mark of 200.

   (5) Cover the monitoring bottle and fix it to the original position.

   (6) Connect the sensor to the monitoring bottle directly and cover the sensor fixing plate again.

3. Follow the following regulations for initial startup and continuous operation:

   (1). Stand the refrigerator for 2h after it is put in place, so as to ensure normal startup of the compressor.

   (2). Connect the refrigerator to a special power socket (with power supply of 220V/60HZ) and do not put goods into the refrigerator by this time.

   (3). When switching on the power for the first time, turn on the battery switch. The audible alarm may give out sounds. This is normal. Press the buzzer button to eliminate the alarm sound. The audible alarm will operate continuously until the temperature of the sensor of temperature monitoring bottle reaches the range of 5℃±2℃.

   (4). Make sure that the two monitoring bottles are filled with 10% glycol solution.

   (5). There is no need to set the temperature since the refrigerator is set to operate at 2-8℃ before delivery.

(6). The temperature of the refrigerator can reach the set temperature only after operation of several hours. Once the temperature in the refrigerator is stable, check that whether the temperature of the monitoring bottle is consistent with the speed of the set point.

(7). Turn on the lamp switch to ensure the normal operation of the lighting lamp in the refrigerator.

(8). Upon completion of the overall check on refrigerator operation, put goods into the refrigerator little by little, but do not put in too many high-temperature goods at a time.

Note: Do not store goods in the space between the bottom of liner and the bottom shelve, so as to prevent from blocking the air duct and affecting the uniformity of temperature in the refrigerator.

【Specification of Control Panel HYC-260/HYC-360】

1. Overall Design Requirements of Computer Board

1.1. The control panel consists of a display panel, a main control panel, a power panel and an independent power supply.

1.2. Basic parameters (power supply): AC

Rated voltage: AC 220V/110V

Rated frequency: 50Hz/60Hz

Rated power: <6W

Control current:

a. The control current of the compressor is not higher than 10A (the starting current is not higher than 70A);

b. The control current for forced defrosting is not higher than 5A;

c. Remote power-off alarm output (relay);

d. Buzzing alarm output;

e. The control current of the fan is not higher than 5A.

1.3. Display:

A 3-digit red digitron is used for display; the display accuracy is 0.1℃ and the display range is from -9.9℃ to 50.0℃.

1.4. Operating conditions:

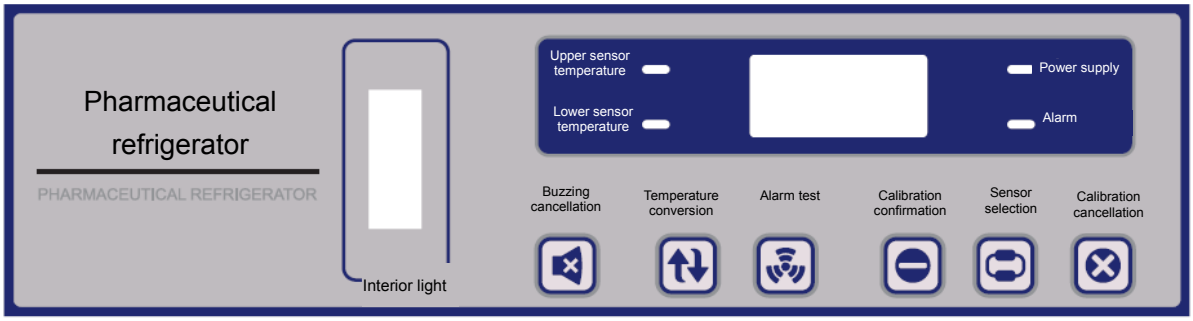
a. Temperature of operating environment: from -10℃ to 40.0℃

b. Relative humidity: <93%

c. Temperature of storage environment: from -30℃ to 60.0℃

2. Appearance

2.1 Appearance: The main control panel, display panel and power panel shall comply with corresponding drawings; marks and letterings shall be complete and clear; and the layout of the display panel is as shown in the following drawing:



Layout of the display panel

Definitions of colors of indicator lamps are as follows:

Indicator lamp	Color	Display type	definition
Alarm indicator lamp	Red	Blinking	At an alarm state
Upper sensor temperature indicator lamp	Lime green	Normally on	The digitron displays the upper sensor temperature.
Lower sensor temperature indicator lamp	Lime green	Normally on	The digitron displays the lower sensor temperature.
Power indicator lamp	Red	Normally on	At a power supply state of main power supply
		Blinking	At a failure state of main power supply

Note: If the maximum temperature indicator lamp is normally on at the same time, the temperature displayed by the digitron is the average temperature of upper and lower sensors.

2.2 Definitions of buttons:

a “Buzzing cancellation” button: cancel buzzing in case of buzzing alarm;

b “Temperature conversion” button: convert the display temperature of the digitron;

c “Alarm test” button: It is used for testing the alarm function. For each press of the button, the buzzer will ring for three times continuously with a frequency of 1Hz and the alarm indicator lamp will blink for three times; if the remote hardware alarm state is not achieved, the remote

alarm relay will be disconnected after being connected for 3 seconds and operate based on the need of alarm; this is normal alarm, or the alarm is failed; if the charge battery is turned off or the battery power is low, for each press of the alarm test button, besides the above function, “E5” will be displayed and blinked in the display window for three times (each time for 3 seconds).

d “Sensor selection” + “Calibration cancellation” buttons: set temperatures (press for at least 5 seconds);

e “Temperature conversion” + “Calibration cancellation” buttons: set temperatures of all sensors (press for at least 5 seconds);

f “Buzzing cancellation” + “Alarm test” buttons: cancel revised values and restore to the factory set parameters.

3. Function Requirements

3.1 Initial state

The operating state of initial energization is the initial state; the display temperature is the average temperature of upper and lower sensors; the temperature gear is set as 4℃; and the compressor is controlled to start up or not based on the temperature.

3.2 Temperature regulation and control

While pressing the “Sensor selection” and “Calibration cancellation” buttons for at least 5 seconds, the original setting value will begin to blink and temperature setting state will be achieved; afterwards, the temperature value will be increased by 0.1 for each press of “Calibration cancellation” button till reaching the maximum value; the system default of maximum value is “8”; while pressing the “Calibration cancellation” button again, minimum setting state will be achieved; the temperature value will be decreased by 0.1 for each press of “Sensor selection” button till reaching the minimum value; the system default of the minimum value is “2”; while pressing the “Sensor selection” button again, maximum setting state will be achieved again; the system default of maximum value is “8”; while the required set temperature is achieved, if buttons are not pressed within 5 seconds, the set temperature will be stored in the system and the control temperature setting state will be quitted (factory set temperature range is 2-8℃). The pre-set temperature or average temperature of sensor in the refrigerator will be displayed in the digital window again (no blinking).

Within 3 seconds upon the completion of temperature setting and in case that the control temperature setting state is not quitted, while pressing the “Calibration confirmation” button for 10 seconds continuously, the system will enter to the temperature range setting state; SEH will be displayed firstly; while pressing the “Calibration cancellation” or “Sensor selection” buttons within 4 seconds, the current maximum temperature available to be set will be displayed; and the maximum

temperature is set as 8℃ before delivery. The maximum temperature can be increased by pressing the “Calibration cancellation” button again (it can also be regulated by the “Sensor selection” button and the regulation value by the “Sensor selection” button is just opposite to that by the “Calibration cancellation” button); the maximum temperature is 20℃ at most and SEL at least; after 4 seconds upon the completion of regulation, the system will record the set temperature automatically and display SEL; while pressing the “Calibration cancellation” or “Sensor selection” buttons within 4 seconds, the current minimum temperature available to be set will be displayed; and the minimum temperature is set as 2℃ before delivery. The minimum temperature can be increased by pressing the “Calibration cancellation” button again (it can also be regulated by the “Sensor selection” button and the regulation value by the “Sensor selection” button is just opposite to that by the “Calibration cancellation” button); the minimum temperature is -5℃ at least and SEH at most; after 4 seconds upon the completion of regulation, the system will record the set temperature automatically and display AOF; while pressing the “Calibration cancellation” or “Sensor selection” buttons within 4 seconds, the current control temperature difference will be displayed; and the control temperature difference is set as 0.5℃ before delivery. The control temperature difference can be increased by pressing the “Calibration cancellation” button (it can also be regulated by the “Sensor selection” button and the regulation value by the “Sensor selection” button is just opposite to that by the “Calibration cancellation” button); the regulation step value is 0.1℃; the maximum control temperature difference is 3℃ while the minimum is 0.5℃; after 4 seconds upon the completion of regulation, the system will record the set temperature automatically and display ALH; while pressing the “Calibration cancellation” or “Sensor selection” buttons within 4 seconds, the current high-temperature alarm temperature will be displayed; and the high-temperature alarm temperature is set as 6℃ before delivery. The minimum temperature can be increased by pressing the “Calibration cancellation” button (it can also be regulated by the “Sensor selection” button and the regulation value by the “Sensor selection” button is just opposite to that by the “Calibration cancellation” button); the minimum temperature is 20℃ at most and set temperature ALL at least; after 4 seconds upon the completion of regulation, the system will record the high-temperature alarm temperature automatically and display ALL; while pressing the “Calibration cancellation” or “Sensor selection” buttons within 4 seconds, the current low-temperature alarm temperature will be displayed; the maximum temperature can be increased by pressing the “Calibration cancellation” button again; the maximum temperature is set temperature ALH at most and -5℃ at least (it can also be regulated by the “Sensor selection” button and the regulation value by the “Sensor selection” button is just opposite to that by the “Calibration cancellation” button); and the maximum temperature is set as 2℃ before delivery. After 4 seconds upon the completion of regulation, the system will record the low-temperature alarm temperature automatically and the control temperature setting state will be quitted automatically if there is no operation within 10 seconds. The pre-set temperature or average temperature of sensor in the refrigerator will be displayed in the digital window again (no blinking).

3.3 Startup and shutdown temperatures:

3.3.1 Startup and shutdown of the compressor is controlled by the control sensor RT2.

a. Startup temperature of the compressor: setting value (Ts) + AOF+0.5

b. Shutdown temperature of the compressor: setting value (Ts)-AOF+0.5

c. The shutdown time of the compressor shall not be less than 3 minutes for each time.

3.3.2 If the compressor is not shut down after operating for one hour continuously, it shall be forced to be shut down for 5 minutes; at this time, the electrical heater is not started but the internal fan operates normally.

For shutdown of the compressor of each time, confirm the accumulated operating time of the compressor and shut it down if the time is more than 7h (at this time, the electrical heater is not in operation but the internal fan operates normally). Start up the compressor while it is shut down for 5 minutes or any one of the upper or lower display temperatures is higher than 5.6℃.

3.3.3 While any one of the upper or lower display temperatures is lower than 2.5℃, the compressor shall be forced to be shut down; the defrosting heater strip is not electrified but the internal fan operates normally; and the shutdown time shall not be less than 3 minutes.

3.4 Buzzing alarm and light-emitting tube (ALARM) blinking alarm:

3.4.1 Temperature requirements of over-temperature alarm: maximum alarm temperature ALH-send over-temperature alarm when any one of the upper and lower display temperatures is higher than ALH for at least 2 minutes; minimum alarm temperature ALL-send over-temperature alarm when any one of the upper and lower display temperatures is lower than ALL for at least 2 minutes.

While the display temperature meets the requirement, namely, the display temperature is nearly the same as the set temperature, and the actual temperature in the refrigerator shall be the same as the display temperature.

3.4.2 Power failure alarm: While the power supply AC220V/110V is disconnected, the backup charge battery is switched to by the relay for supplying power to CPU.

While the power is off and the backup charge battery is used for supplying power to the computer board, buzzing alarm will be conducted immediately; **the power light-emitting tube (ALARM) on the panel will blink; the average temperature of upper and lower sensors in the refrigerator will be displayed in the window of display screen for 1 minute and then the display will be stopped for 2 minutes (display alternately in this way); the alarm sound can be canceled by pressing the "Buzzing cancellation" button but the remote alarm function can not be removed.**

3.4.3 Sensor failure alarm: When one of upper sensor, control sensor, lower sensor and defrosting sensor fails, the alarm will be given.

In case of an alarm described in the above Articles 3.4.1, 3.4.2 and 3.4.3, the buzzer will buzz continuously with a frequency of 1Hz; while pressing the "Buzzing cancellation" button, buzzing of current failure and the remote alarm state can be canceled (in case of power failure at this time, the "Alarm cancellation" button shall be pressed again). If the alarm state still exists after 20 minutes, the buzzing alarm and remote alarm will be sent again till pressing the "Alarm cancellation" button again.

3.5 Generating an alarm upon opening a door: When the door is open for 600s or longer time, the luminotron (ALARM) on the panel blinks, and the buzzer continuously generates an alarm with 1 Hz.

3.6 Generating an alarm by a remote relay:

a. When the controller operates normally, the remote-alarm relay is powered on but does not generate an alarm.

b. ① There are two control sensors: con and alarm. The con sensor is used for first control. The alarm sensor is used for control if the con sensor is faulty. The control fails only when the two sensors are faulty.

② The upper or lower sensor is in the over-temperature status;

③ The upper control, lower control or defrosting sensor is faulty;

④ The AC 220 V/110 V power supply is in outage (an alarm is generated by the hardware);

⑤ The door is open for 600s or longer time;

c. When one of the aforesaid five situations occurs, the normally-closed contact is closed to enable the remote-alarm function. (An electric bell can be connected to enable the remote-alarm function.)

3.7 Defrosting:

a. Normal defrosting function: This function is enabled when the compressor is shut off and disabled when the compressor is started up.

b. Start coercive defrosting: When the ambient temperature is high or the wet materials are stored and the compressor is started up, but the temperature detected by the defrosting sensor is still not higher than -5ºC, the defrosting relay start up (the coil is powered on);

c. Stop coercive defrosting: **When the upper and lower display temperature is not less than 5.6ºC**, or the time is not less than 20 minutes, **or the temperature of the control sensor and alarm sensor is not less than 7ºC**, the machines stops defrosting and automatically changes to the normal operation status.

d. Coercive defrosting is carried out for at most once within adjacent 24 hours. The compressor and fan stop when coercive defrosting is started.

3.8 The fan delays after the coercive defrosting is stopped.

The compressor starts up after coercive defrosting, but the fan operates normally after three minutes.

3.9 Troubleshooting of the sensors

When the sensor is open- or short-circuited, the alarm lamp on the panel blinks (1 Hz), and the buzzer generates an alarm.

a. Open or short circuit of the upper temperature sensor: display E1.

b. Open or short circuit of the lower temperature sensor: display E2.

c. Open or short circuit of the control sensor: display E3.

d. Open or short circuit of the defrosting sensor: display E4.

e. When the control sensor is faulty, the compressor operates and stops at intervals of 5 minutes.

3.10 Control of the internal fan:

The internal fan stops when the door is open. It normally operates when the door is closed.

3.11 Rules for accessing the compressor and defrosting relay:

The three relays are accessed by turns according to the following order:

Each time, two relays are used, and one relay is for standby. This order is cycled.

3.12 Correction of the temperature display

Hold the "Temperature conversion" and "Calibration confirmation" buttons for more than 10s to change to the temperature display correction state. At this moment, "D1" is displayed on the screen. Then press the "Sensor selection" button to cyclically select the sensor to be corrected. The codes represent the following: D1: upper temperature sensor; D2: lower temperature sensor; D3: control sensor; D4: defrosting sensor; D5: alarm sensor. Press the "Sensor selection" button to select the sensor requiring correction.

Press the "Calibration cancellation" button to display the current value of the sensor to be corrected, and press the "Alarm test" button to display the corrected value. The original value is 0. Press the "Calibration cancellation" button to increase the corrected value of the sensor by 0.1ºC each time. Press the "Sensor selection" button to decrease the corrected value of the sensor by 0.1ºC each time. The corrected value of the sensor is ±2ºC.

After the value of the temperature sensor is corrected, the code of the currently calibrated sensor is displayed by pressing the "Calibration confirmation" button again or if no operation is carried out within 5s. Press the "Sensor selection" button again to select another sensor whose value needs to be corrected. The corrected value is saved automatically and the temperature display correction mode is quitted if no operation is carried out within 10s.

3.13 Circuit requirements for charge batteries:

(1) The circuit for a charge battery is 8 V/12 V switchable. The switching mode is to set a DIP switch on the main control panel. An 8 V charge battery is used when the DIP switch is at the 8 V position, and a 12 V charge battery is used when the DIP switch is at the 12 V position.

(2) Charge mode:

a: Use a 12 V recharge battery. The voltage of the charge battery is detected when the blood refrigerator is powered on. The charge battery is charged when the voltage is lower than **11.5 V**, with a charging voltage of **14.2 V**. The charging stops for 5 minutes in every 30 minutes to detect the battery voltage, and the process is repeated if the detected voltage is lower than **13.2 V**. The charging stops until the voltage is higher than **13.2 V**. The battery is considered faulty if its voltage is still lower than **10.8 V** after being charged for 100 hours. Then the charging stops until the faulty battery is replaced with a new one (By

default, the battery is replaced when the refrigerator is powered on again).

b: Use an 8 V recharge battery. The voltage of the charge battery is detected when the blood refrigerator is powered on. The charge battery is charged when the voltage is lower than 7.4 V. The voltage at both ends of the battery is 9.5 V during charging. The charging stops for 5 minutes in every 30 minutes to detect the battery voltage, and the process is repeated if the detected voltage is lower than 9.2 V. The charging stops when the voltage is higher than 9.2 V. The battery is considered faulty if its voltage is still lower than 6.5 V after being charged for 100 h. The charging stops until the faulty battery is replaced with a new one.

c: The circuit of a charge battery is designed with a function to protect against reverse connections. The buzzer on the control panel keeps ringing if the anode and cathode of the battery are connected reversely.

When the 220 V power supply and battery switch are off simultaneously, the display panel do not present any data if only the battery switch is on. When the 220 V power supply and battery switch are on simultaneously, the display panel is powered up after the 220 V storage battery is disconnected.

3.14 Add the display of the temperature at the control point to the network protocol.

4. Control Priorities

Calibration display > Temperature setting display > Normal control

E3 display > E1 display > E2 display > E4 display > temperature display

5. The control panel should be provided with an interface for data communication with a computer.

6. When the main power supply is off:

When a 12 V charge battery is used, the battery system will be shut off automatically if the voltage of the charge battery is lower than 10.5 V; when an 8 V charge battery is used, the battery system will be shut off automatically if the voltage of the charge battery is lower than 7 V. The display panel does not display the temperature in the refrigerator; at that time, all the circuits of the charge battery can be disconnected if the battery switch is off.

The main control chip shall be plug-in type for upgrade at anytime;

The compressor starts and stops per 10 minutes. The service life of all the boards on a computer board should be not lower than 10 years. The power panel should be designed with the function for lightning protection. After being wired, all the boards on a computer board should have an insulation resistance of not lower than 700 MΩ in a test.

【Fault code】

The main fault codes

The display panel can not display the temperature value.	Display E5	1. The charge battery switch is off or faulty.	Turn on the switch. Replace the switch.
		2. In case of an old control panel, detect whether any power outputs from the battery connector on the control panel. If yes, perform the specified operation,	Replace the battery.
		3. If no power outputs from the battery connector on the control panel	Replace the new board (power panel or control panel) on the computer.
		4. For a new board on the computer, the charge battery is invalid	Replace the charge battery.
	Display E4	3. The defrosting sensor is open-circuited, short-circuited, or damaged.	Repair or replace the defrosting sensor.
	Display E3	4. The control sensor is open-circuited, short-circuited, or damaged.	Repair or replace the control sensor.
	Display E2	5. The lower display sensor is open-circuited, short-circuited, or damaged.	Repair or replace the lower display sensor.
	Display E1	6. The upper display sensor is open-circuited, short-circuited, or damaged.	Repair or replace the upper display sensor.

【Parameters Displayed on the Display Panel】

	Liquid-crystal display	Setting value
Maximum temperature of the refrigerator	SHE	8
Minimum temperature of the refrigerator	SEL	2
Temperature for a high-temperature alarm	ALH	10
Temperature for a low-temperature alarm	ALL	2
Display of the temperature difference	AOF	1.5

【Details of Main Replaceable Parts of HYC-360】

S/N	Parts	Specification or model	Special No.
1	Compressor	Danfoss NL10MF	0070701307
2	Display panel	Display panel shared with the blood cabinet	0074090955
3	Display panel paste	Chinese paste membrane for medicine cabinet	0070506744
4	Main control panel	HXY-306 control panel	0074091548
5	Lamp cover	-	0070202865
6	Lighting lamp	Lamp tube	0074090803
7	Fan 1	Induced draught fan	0074090698
8	Fan 2	Condensate fan	0075030020A
9	Evaporator		
10	Condenser	SC-400 condenser	0070701378
11	Food shelf 1	-	0070104122
12	Food shelf 2	-	0070202625
13	Door power cable	DW-86L380 door power cable	0070401762
14	Door	HYC-360 glass door	0070812342
15	Battery switch	HXC-306 battery switch	0070401235
16	Switch	Switch level	0070201193A

【Details of Main Replaceable Parts of HYC-260】

S/N	Parts	Specification or model	Special No.
1	Compressor	Danfoss NL7.3MF	0070701306
2	Display panel	Display panel shared with the blood cabinet	0074090955
3	Display panel paste	Chinese paste membrane for medicine cabinet	0070506744
4	Main control panel	HXY-306 control panel	0074091548
5	Lamp cover	-	0070202865
6	Lighting lamp	Lamp tube	0074090803
7	Fan 1	Induced draught fan	0074090698
8	Fan 2	Condensate fan	0075030020A
9	Evaporator	SC-260 evaporator	0070701374
10	Condenser	Wire and tube condenser	0070701293
11	Food shelf 1	-	0070104122
12	Food shelf 2	-	0070202625
13	Door power cable	N/A	N/A
14	Door	Upright cabinet glass door	0070812343
15	Battery switch	HXC-306 battery switch	0070401235
16	Switch	Switch level	0070201193A

【Common Faults and Troubleshooting Measures】

Symptom	Cause Analysis	Troubleshooting Measure
1. The compressor fails to start up.	1. A fuse is damaged.	Replace the fuse.
	2. The wiring connector in the engine room is disconnected.	Replace the connector.
	3. The wire connections of the electric cabinet are not in place.	Check and make wire connections in place.
	4. The control panel is faulty.	Replace the control panel.
	5. The starter or thermal protector is damaged.	Replace the starter or thermal protector.
	6. The compressor is faulty.	Replace the compressor.
2. The temperature in the cabinet is uneven. The temperature in the upper and lower parts differs greatly.	1. The internal fan is faulty.	Replace the fan.
	2. The air duct is blocked.	Remove the obstacles.
	3. The door switch is broken.	Replace the door switch.
	4. The power panel is faulty.	Replace the power panel.
3. The display panel displays E1	The upper display sensor is open-circuited, short-circuited, or damaged.	Repair or replace the upper display sensor.
4. The display panel displays E2	The lower display sensor is open-circuited, short-circuited, or damaged.	Repair or replace the lower display sensor.
5. The display panel displays E3	The control sensor is open-circuited, short-circuited, or damaged.	Repair or replace the control display sensor.
6. The display panel displays E4	The defrosting sensor is open-circuited, short-circuited, or damaged.	Repair or replace the defrosting sensor.
7. The display panel displays E5	1. The charge battery switch is off or faulty.	Turn on or replace the switch.
	2. Confirm the boards on the computer are new	Replace the charge battery.
	3. The display panel is old, and there is power output from the battery connector on the control panel.	Replace the battery.
	4. The display panel is old, and no power is output from the battery connector on the control panel.	Replace the display panel with a new computer board.
8. The refrigerator generates a loud noise.	1. The place for the refrigerator is not flat.	Change the place of the refrigerator.
	2. Resonance between pipelines or between the compressor and refrigerator cabinet occurs during operation of the compressor.	Handle the pipelines to avoid resonance.
	3. The internal fan and fan support are loose.	Fix the internal fan and fan support again.
	4. The connecting bolts of the compressor are loose.	Tighten the connecting bolts.
9. The refrigerator is of poor refrigeration.	1. The refrigerant leaks seriously.	Check the leakage and refill refrigerant.
	2. The capillary tube or system is blocked.	Clean the capillary tube or replace the filter.
10. No alarm is generated.	1. Wire connections are not in place.	Check and make wire connections in place.
	2. The control panel is faulty.	Replace the control panel.

【FAQs】

(1) The temperature in the refrigerator is higher or lower.

Answer: The temperature in the refrigerator is related to the ambient temperature. If it is higher or lower, solve the problem by adjusting the control temperature. See the instructions in the appendix for the specific method.

(2) The display temperature is different from the actually measured temperature.

Answer: The display temperature indicates the surface temperature of the thermometry box. It is equivalent to the surface temperature of the stored blood bag when the blood bank is in stable operation. When the temperature measured by the thermometer indicates the air temperature inside the refrigerator at that time and it varies within a certain range, it fails to correctly reflect the temperature of the blood bag at the time.

(3) Ponding occurs at the refrigerator bottom after operation for a period.

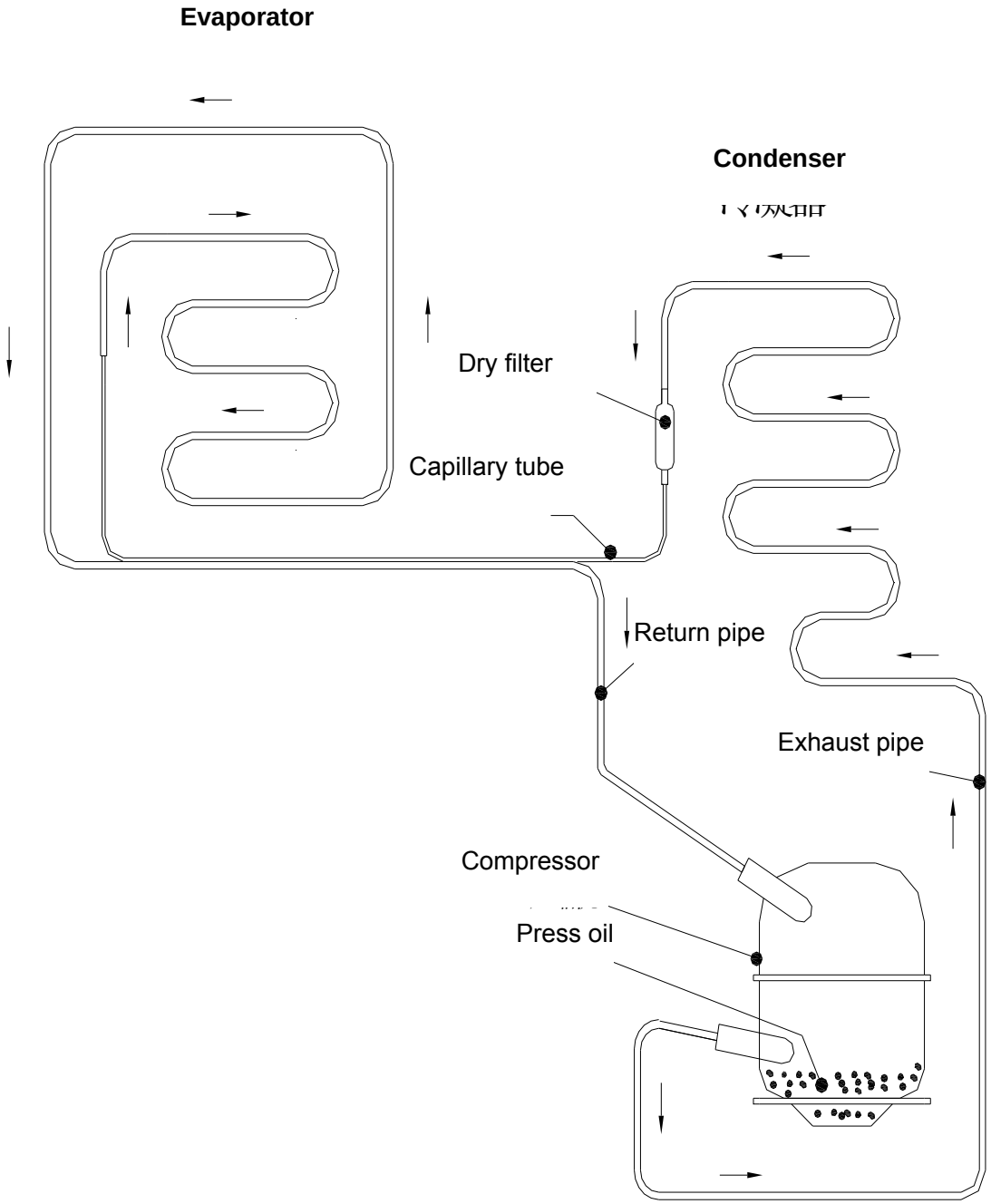
Answer: In the case of a little water, wipe the refrigerator with a towel regularly.

In the case of much water, check whether drainage pipes are blocked or impeded, and clear them by using fine iron wires.

(4) The display temperature differs from the actual temperature when the refrigerator is powered on.

Answer: The display temperature refers to the temperature of the thermometry box (load), whereas the actually measured temperature indicates the air temperature. For this reason, there is a certain deviation between them. That is a normal situation.

【Structure Diagram of the Refrigeration System】



【Installation and Removal of Key Parts】

1 Precautions for Removal and Installation

a Pull out power plugs during removal and installation.

b. Install parts in a reverse order of removing them. Install all parts at the original positions of the product.

2 Installation and Removal of the Control Panel

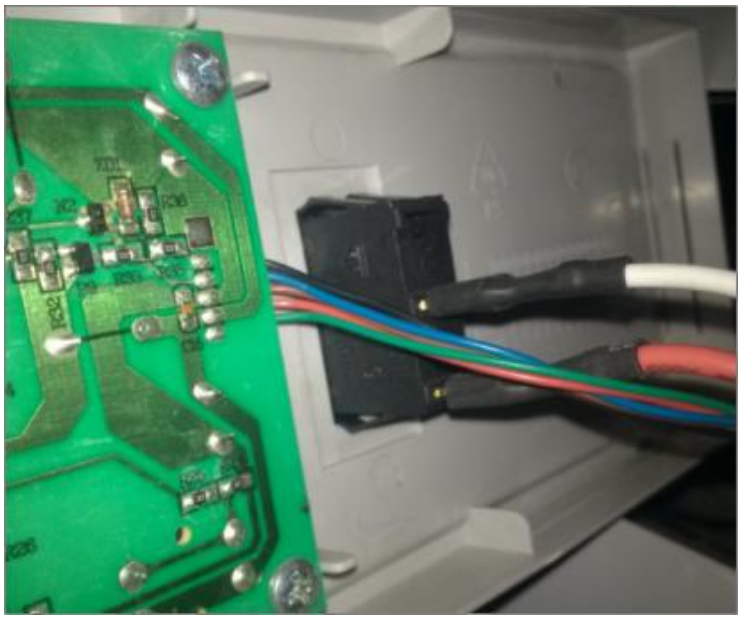
Step 1. Dismantle the set screws on the top cap, as indicated by the arrows shown in the following figure. Moreover, loosen the fixing clip of the fixing clip to avoid damage to the power cable during dismantling the top cap, and ensure that the fixing clip is tightened during installation.

Step 2. Dismantle the cap plate to find the master control circuit board and the starter position. Rotate the starter to dismantle or replace it, as shown in the following figure.

Step 3. Find the position of the control panel, which is secured by four snaps. Slightly push the control panel by pressing its casing to dismantle it.

Note: Do not forcibly remove the control panel to avoid damages to the control panel and the machine casing.

Step 4. Remove the cables which connect the machine to the control panel: two power cables and one data cable. Then dismantle the control panel.



3 Installation and Removal of the Evaporator Fan

Step 1. Remove all the shelf and storage baskets in the closet as well as fixed blocks on the shelf, and then remove the screws indicated by the arrows.

Step 2. Remove the screws in the upper part of the fan baffle. At this time, support the fan by hand

to avoid damage.

Step 3. Slightly bend the fan baffle, remove the power cable of the fan, and then dismantle the fan and fan baffle.

Step 4. Remove the screws at other positions of the backplane to see the evaporator.

4 Installation and Removal of the Compressor

Step 1. The compressor is right below the product, as shown in the following figure. Remove the two screws on the cover plate.

Step 2. Push up the cover plate to remove it. However, do not apply excessive force to avoid damage to the product.

Note: Before installing the cover plate, align the four snaps at the positions shown in the following figure. Then press the cover plate downward to install it in place.

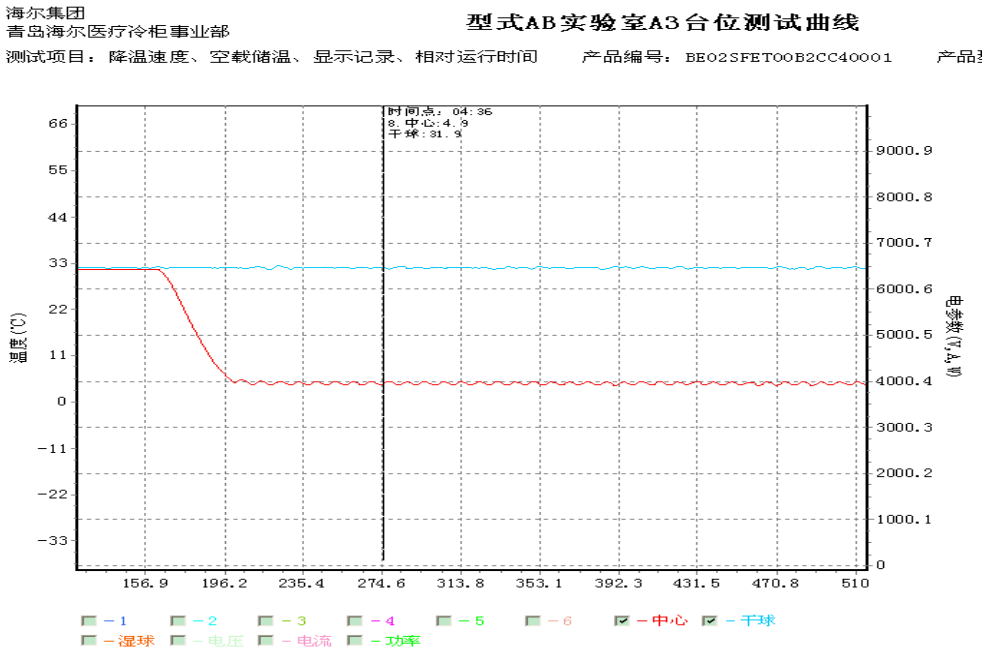
Step 3. Remove the screws at the four corners of the compressor to remove the compressor.

ZEL
GL90TB
R134a
SUCTION

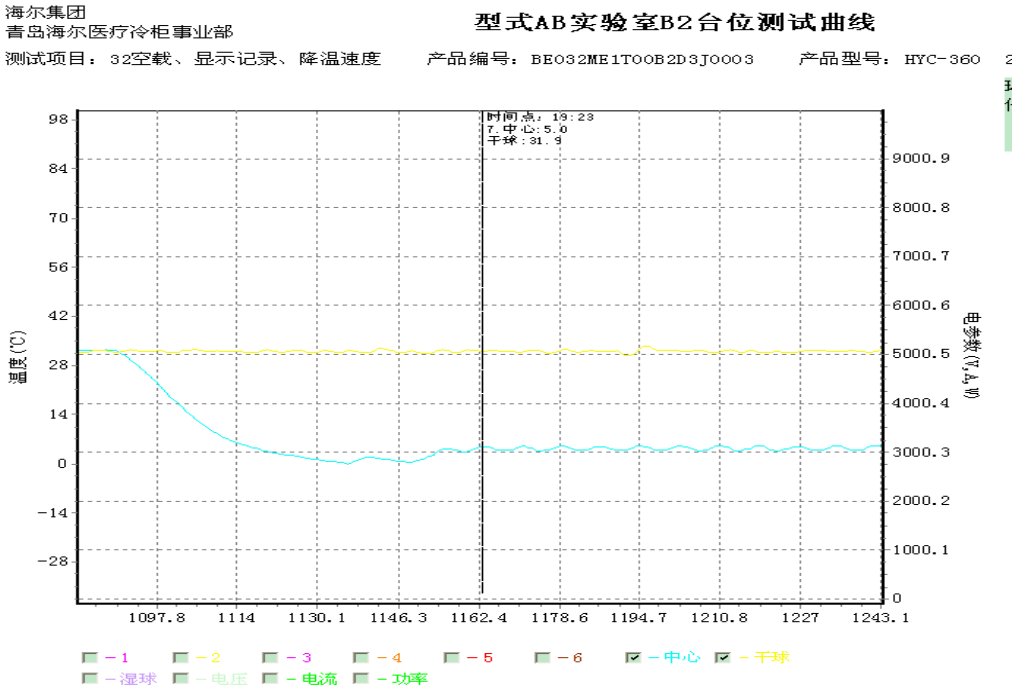
【Gas collection and charge】

1. Diagram of refrigerating machine

【Testing Date】



HYC-260



HYC-360

Cooling Rate

Haier

Inspired living

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